

What is claimed is:

1. An optical memory medium comprising:
at least one multi-layered waveguide hologram ROM for storing data to be read
5 out by using diffracted light based on incident light to a multi-layered waveguide
hologram to read out data; and
at least one memory integrally constituted with the multi-layered waveguide
hologram ROM for reading and writing data.
- 10 2. An optical memory medium as recited in claim 1, further comprising a guide for
fixing the multi-layered waveguide hologram ROM so that the multi-layered waveguide
hologram ROM is removable.
3. An optical memory medium as recited in claim 2, wherein the guide is provided
15 with a groove having a predetermined width and length, and wherein at least one
hologram ROM is fixed by the groove.
4. An optical memory medium as recited in claim 1, wherein the memory for
reading and writing is an IC memory,
20 and further comprising:
a plurality of terminals for the IC memory placed in a predetermined
circumferential portion of the optical memory medium; and
an incident portion of reference light for the multi-layered waveguide hologram
ROM placed in another circumferential portion adjacent to the predetermined
25 circumferential portion for the terminals for the IC memory.

5. An optical memory medium as recited in claim 4, wherein the optical memory medium has external dimensions of 32 mm x 24 mm x 2.1 mm, or has all or any of the external dimensions less than 32 mm x 24 mm x 2.1 mm.

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6. An optical memory medium as recited in claim 1, wherein the multi-layered waveguide hologram ROM and the memory are made in a shape of a plate, respectively, and are integrally stacked in the direction of a thickness thereof.

10 7. An optical memory medium as recited in claim 1, wherein the multi-layered waveguide hologram ROM and the memory are made in a shape of a plate, respectively, and are integrally arranged in the direction of a width or depth thereof.

8. An optical memory medium as recited in claim 1, further comprising a light
15 absorbent on a surface tangent to a surface opposite to a surface from which the diffracted light of the multi-layered waveguide hologram ROM is taken out.

9. A reproduction apparatus for an optical memory medium comprising:
an optical memory medium including:

20 at least one multi-layered waveguide hologram ROM for storing data to be read out by using diffracted light based on incident light to a multi-layered waveguide hologram; and

at least one memory integrally constituted with the multi-layered waveguide hologram ROM for reading and writing data;

25 a light inputting unit for inputting light into the multi-layered waveguide

hologram;

a light receiving unit for receiving light diffracted at the multi-layered waveguide hologram based on the light input by the light inputting unit to convert into an electric signal; and

5 a data record reproducing unit for reading and writing data with regard to the memory.

10. A reproduction apparatus for an optical memory medium as recited in claim 9, further comprising a determination unit for determining whether or not a medium being
10 inserted is the optical memory medium, depending on whether or not the diffracted light emitted from the multi-layered waveguide hologram ROM is detected by the light receiving unit.

11. A determining method of determining a type of medium mounted in a
15 reproduction apparatus for an optical memory medium by a determination unit provided with the reproduction apparatus for the optical memory medium that includes at least one multi-layered waveguide hologram ROM for storing data to be read out by using diffracted light based on incident light to a multi-layered waveguide hologram, and at least one memory integrally constituted with the multi-layered waveguide hologram
20 ROM for reading and writing data, the method comprising:

detecting that a medium is mounted;

emitting light to a predetermined place of the mounted medium;

monitoring whether or not diffracted light from the multi-layered waveguide hologram ROM is detected; and

25 determining that the mounted medium is the optical memory medium when the

diffracted light is detected.

12. A determining method as recited in claim 11, wherein the determining procedure determines that the mounted medium is an IC memory card when no diffracted light is
5 detected.

13. A determining method as recited in claim 11, wherein the determination unit stops emitting the light when it is determined that the mounted medium is not the optical memory medium.
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14. A determining method as recited in claim 11, wherein the monitoring procedure includes using a two-dimensional light receiving element for the detection of the diffracted light, and monitoring whether or not at least one area of the two-dimensional light receiving element has detected the diffracted light.
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15. A determining method as recited in claim 11, wherein,
when the hologram ROM can be removable with the optical memory medium mounted into the reproduction apparatus, after the detecting of the mounted medium, the procedure from the emitting of light to the determining of the mounted medium is
20 repeated in a predetermined time interval.